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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: :

ALAIN VALLEE ET AL :

SERIAL NO.: NEW DIVISIONAL APPL. : ATTN: APPL. DIVISION

FILED: HEREWITH :

FOR: ELECTROLYTIC COMPOSITION WITH POLYMER BASE FOR ELECTROCHEMICAL GENERATOR :

PRELIMINARY AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Prior to examination on the merits, please amend the above-identified application as follows:

IN THE CLAIMS

Please cancel Claims 1-47 without prejudice.

Please add new Claims 48-62 as follows:

48. (New) A process for manufacturing a sub-assembly of an electrochemical generator comprising:

coating an electrode support in air with a solution comprising an electrode material, a second polymer which is slightly swellable with one or more polar aprotic solvents, and an optional coating solvent;

drying the coated electrode support to provide a porous composite electrode; and

spreading onto the dried porous composite electrode, under anhydrous conditions, a

liquid aprotic solution comprising a first polyether polymer or prepolymer, an optional volatile organic diluent, a polar aprotic solvent, and at least one alkali metal salt, to provide a first polymer matrix on the porous composite electrode which is which is thermally, UV, or electron beam cross-linkable and swellable with one or more polar aprotic solvents.

49. (New) The process of Claim 48, wherein the second polymer is selected from the group consisting of vinylidene fluoride-co-hexafluoropropene, vinylidene fluoride, PVDF, polyacrylonitrile, poly(methylmethacrylate), and poly(ethylene propylene diene).

50. (New) The process of Claim 48, wherein the second polymer is a polyether polymer or prepolymer which is thermally, UV or electron beam cross-linkable, and the first polymer swells less than the second polymer when contacted with a polar aprotic solvent.

51. (New) The process of Claim 50, wherein the porous composite electrode is a carbon anode.

52. (New) The process of Claim 48, wherein the porous composite electrode is a composite cathode having an electrode material comprising a phosphate of a transition metal operating at 3.5-3.7 V.

53. (New) The process of Claim 48, wherein the liquid aprotic solution comprises a first polyether polymer, an optional volatile organic diluent, a polar aprotic solvent, and at least one alkali metal salt, and further comprises a prepolymer, oligomer or monomer which is thermally, UV, or electron beam cross-linkable.

54. (New) The process of Claim 53, wherein the polyether is thermally, UV, or electron beam cross-linkable.

55. (New) A process of assembling an electrochemical generator comprising:

joining an anodic sub-assembly made by the process of Claim 48 with a cathodic sub-assembly made by the process of Claim 48.

56. (New) The process of Claim 55, wherein the anodic sub-assembly is made by the process of Claim 51.

57. (New) The process of Claim 55, wherein an electrolytic separator which is less than 10 μm thick and which comprises a polyether and a solid filler is inserted between the cathodic and anodic sub-assemblies during said joining.

58. (New) The process of Claim 55, wherein the porosity of one of the cathodic or anodic sub-assemblies is at least partially unfilled, and the unfilled porosity is impregnated with a liquid electrolyte after said joining.

59. (New) The process of Claim 53, wherein the prepolymer, oligomer or monomer is a crosslinking additive selected from the group consisting of trimethylolpropane triacrylate, trimethylolpropane trimethacrylate, polyethylene oxide diacrylate, polyethylene oxide dimethacrylate, glycerol triacrylate, glycerol trimethacrylate, pentaerythritol, tetraacrylate, glycerol propoxylate triacrylate, dipentaerythritol pentaacrylate, dipentaerythritol hexaacrylate, and di(trimethylolpropane) tetraacrylate.

60. (New) The process of Claim 48, further comprising, prior to spreading the liquid aprotic solution, spreading onto the dried porous composite electrode a second liquid aprotic solution comprising a third polymer or polyether prepolymer and at least one alkali metal salt, to provide a third polymer matrix on the porous composite electrode which is which is thermally, UV, or electron beam cross-linkable and swellable with at least one polar aprotic solvent,

wherein the first polymer matrix is less swellable than the third polymer matrix when contacted with a polar aprotic solvent.

61. (New) The process of Claim 60, wherein second polymer is selected from the group consisting of vinylidene fluoride-co-hexafluoropropene, vinylidene fluoride, PVDF, polyacrylonitrile, poly(methylmethacrylate), and poly(ethylene propylene diene).

62. (New) The process of Claim 48, wherein the polar aprotic solvents are selected from the group consisting of propylene carbonate, ethylene carbonate, tetrahydrofuran, 2-methyltetrahydrofuran, 1,3-dioxolane, 4,4-dimethyl-1,3-dioxolane, γ-butyrolactone, butylene carbonate, sulfolane, 3-methylsulfolane, tert-butyl-ether, 1,2-dimethoxyethane, 1,2-diethoxyethane, bis(methoxyethyl)ether, 1,2-ethoxymethaoxyetahne, tetrabutylmethylether, and glymes and sulfonamides of formula: $R_1R_2N\text{-}SO_2\text{-}NR_3R_4$, in which R_1, R_2, R_3, and R_4 are each independently $C_{1\text{-}6}$ alkyl groups or $C_{1\text{-}6}$ oxyalkyl groups.

SUPPORT FOR THE AMENDMENTS

New Claims 48-62 are supported by Claims 35-47 as originally filed, and throughout the specification. No new matter is believed to be added by entry of new Claims 48-62.

Claims 48-62 are active.

Applicants submit that the present application is in condition for examination on the merits. Early notification to this effect is earnestly solicited.

Respectfully submitted,,

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